

WHAT IS CLAIMED IS:

- 1 1. A method of automatically defining a spatial arrangement of
2 structural components relative to each other within an
3 installation space, using a data processing system
4 including a configuration tool and a drawing module,
5 comprising the steps:
6 a) inputting general parameters of a selected
 installation space into said configuration tool;
7 b) storing first data that define a space-specific
8 geometry of said selected installation space, and then
9 loading said first data and displaying said first data
10 in said drawing module;
11 c) storing second data that respectively geometrically
12 define structural components that are to be arranged
13 in said selected installation space;
14 d) providing said second data together with said first
15 data into said drawing module;
16 e) providing a rule set that defines at least customer-
17 specific requirements of a customer for whom said
18 structural components are to be arranged in said
19 installation space; and
20 f) processing said first data and said second data
21 together according to said rule set in said
22 configuration tool so as to automatically define a
23 spatial arrangement of said structural components
24 relative to each other within said installation space.
25

1 **2.** The method according to claim 1, wherein said step f)
2 further optimizes a configuration of said structural
3 components relative to each other within said installation
4 space with respect to at least one of a functional position
5 of each one of said structural components and a quantity of
6 said structural components arranged in said installation
7 space.

1 **3.** The method according to claim 1, wherein said step c)
2 comprises carrying out a functional and data analysis so as
3 to mathematically describe said structural components and
4 to mathematically represent said structural components
5 according to position rules.

1 **4.** The method according to claim 1, wherein said data
2 processing system further comprises a document generating
3 tool including a processing program, and said method
4 further comprises, using said generating tool, generating
5 production documents including at least one of drawings,
6 parts lists, materials lists, video preliminary
7 examinations, plotter plans, installation plans, production
8 plans, and production contracts, corresponding to said
9 spatial arrangement defined in said step f).

1 **5.** The method according to claim 4, wherein said production
2 documents include said drawings, and further comprising
3 transferring drawing data representing said drawings via
4 a plot script from said document generating tool to a

5 computer aided design (CAD) output system that outputs said
6 drawings.

1 6. The method according to claim 4, further comprising
2 transferring said production documents via an interface
3 from said document generating tool to a technical
4 administrative system.

1 7. The method according to claim 6, wherein said technical
2 administrative system comprises a production planning
3 system.

1 8. The method according to claim 1, wherein said selected
2 installation space comprises at least one partial space
3 within an aircraft cabin of a selected aircraft type.

1 9. The method according to claim 8, wherein said at least one
2 partial space within said aircraft cabin comprises a
3 service channel in said aircraft cabin, said structural
4 components to be installed in said service channel include
5 any one or more of passenger service units, lights, air
6 vents, loudspeakers, oxygen supply units, video monitors,
7 informational displays, and control switches.

1 10. The method according to claim 9, further comprising
2 providing third data that respectively define additional
3 cabin outfitting components including one or more of
4 galleys, toilets, storage cabinets, passenger seats and
5 baggage compartments arranged according to a customer-

6 specified cabin layout, and wherein said step f) further
7 includes processing said third data together with said
8 first data and said second data according to said rule set
9 to define said spatial arrangement of said structural
10 components.

1 11. The method according to claim 10, further comprising fourth
2 data that respectively define surrounding components
3 including one or more of cabin dividers, baggage
4 compartments, video monitors, and display screens of which
5 the arrangement will limit the possible range of variants
6 of said spatial arrangement, and wherein said step f)
7 further includes processing said fourth data together with
8 said first data, said second data and said third data
9 according to said rule set to define said spatial
10 arrangement of said structural components.

1 12. The method according to claim 11, wherein said surrounding
2 components include said baggage compartments, which further
3 serve as carriers for equipment and for electrical
4 interfaces of said service channel.

1 13. The method according to claim 12, wherein said fourth data
2 define said baggage compartments as a row of successive
3 ones of said baggage compartments, and wherein said
4 processing in said step f) automatically adapts said fourth
5 data defining said row of baggage compartments according to
6 said rule set.

1 **14.** The method according to claim 10, wherein said providing of
2 said third data comprises selecting and reading out said
3 third data from a cabin outfitting component reference
4 database in which said third data are stored among data
5 defining plural different available cabin outfitting
6 components.

1 **15.** The method according to claim 9, wherein said step c)
2 comprises storing said second data in a component reference
3 database that contains data defining plural different
4 available structural components, and wherein said step d)
5 of providing said second data comprises selecting and
6 reading out said second data from said component reference
7 database.

1 **16.** The method according to claim 9, wherein said at least one
2 partial space within said aircraft cabin further comprises
3 another space other than said service channel in said
4 aircraft cabin, and wherein said steps are carried out also
5 for defining a spatial arrangement of other components
6 within said another space.

1 **17.** The method according to claim 8, wherein said step b) of
2 storing and loading said first data comprises loading a
3 data set defining a customer-approved preliminary cabin
4 layout into said data processing system through a data
5 input interface.

1 **18.** The method according to claim 1, wherein said step c)
2 comprises storing said second data in at least one
3 reference database that contains parametric data defining
4 various different structural components.

1 **19.** The method according to claim 1, wherein said installation
2 space is a space within a transport vehicle other than an
3 aircraft.

1 **20.** The method according to claim 1, wherein said installation
2 space is an industrial plant, and said arrangement of
3 structural components forms assembled equipment in said
4 plant.